

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 December 2002 (05.12.2002)

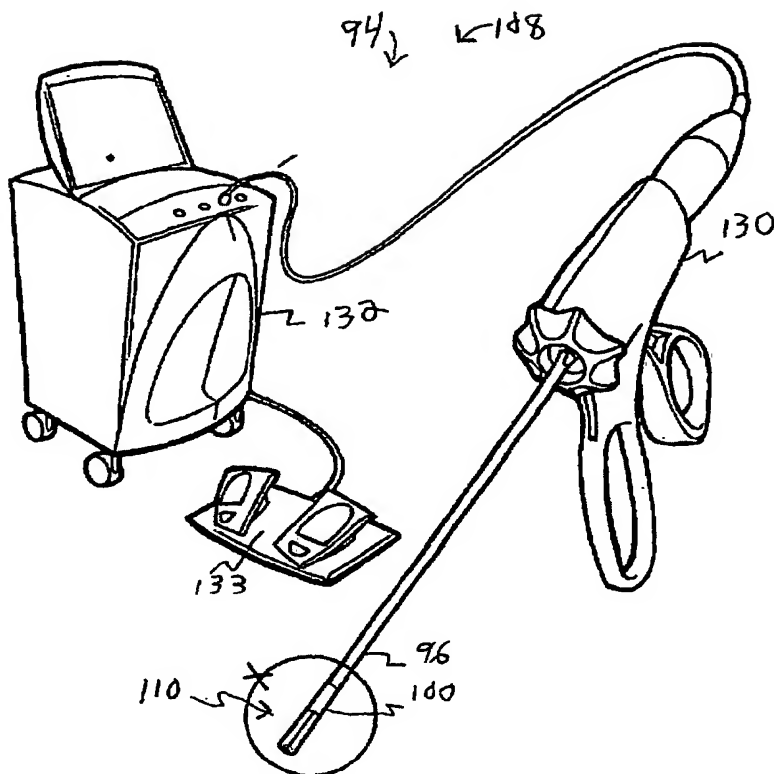
PCT

(10) International Publication Number
WO 02/096508 A3

- (51) International Patent Classification⁷: **A61B 8/14**
- (21) International Application Number: PCT/US02/16700
- (22) International Filing Date: 28 May 2002 (28.05.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/294,135 29 May 2001 (29.05.2001) US
10/000,000 22 May 2002 (22.05.2002) US
- (71) Applicant: **ETHICON ENDO-SURGERY, INC.**
[US/US]; ETHICON ENDO-SURGERY, INC., 4545
Creek Road, Cincinnati, OH 45242 (US).
- (72) Inventors: **MAKIN, Inder, Raj., S.**; 11388 Donwiddle
Drive, Loveland, OH 45140 (US). **MAST, T., Douglas**;
3907 Landsdowne Avenue, Cincinnati, OH 45236 (US).
- (74) Agents: **JOHNSON, Philip, S.**, et al.; Johnson & Johnson,
One Johnson & Johnson Plaza, New Brunswick, NJ 08933
(US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN,
YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: ULTRASOUND FEEDBACK IN MEDICALLY-TREATED PATIENTS



(57) Abstract: A method for ultrasound imaging of patient tissue. A first signal is obtained (272) of a first imaging ultrasound wave which has been reflected back from a location in the patient tissue (24) at a first time. A second signal is obtained (274) of a second imaging ultrasound wave which has been reflected back from the location in the patient tissue (24) at a later second time wherein the patient (14) has received at least some medical treatment by the second time. An image of the location is created (276) using the first signal and the second signal. In one example, the method is repeated for different locations to image the patient tissue, wherein the image of the patient tissue includes medically-treated locations and medically-untreated locations.

WO 02/096508 A3



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

(88) Date of publication of the international search report:

24 July 2003

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/16700

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61B 8/14

US CL : 600/466

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 600/101, 109, 117, 118, 160, 167, 173, 407-471; 73/625, 626; 601/2, 3; 3677, 11, 138; 606/130; 378/62-69, 205; 382/128, 131, 132

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,788,636 A (Curley) 04 August 1998 (04.08.1998), entire document.	1-19
Y	US 6,221,014 B1 (Bauer) 24 April 2001 (24.04.2001), entire document.	1-19

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search

01 October 2002 (01.10.2002)

Date of mailing of the international search report

15 APR 2003

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Ali Imam

Telephone No. 703-308-1148

INTERNATIONAL SEARCH REPORT

PCT/US02/16700

Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms: ultrasound, tissue imaging, treatment, therapy, signal, biopsy, needle